

Appl. No. 09/800,645
Amdt. dated October 27, 2006
Reply to Office Action of August 2, 2006

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REMARKS/ARGUMENTS

Claims 1-6, 8-19, 22-33 and 77-79 are pending in this application.

Claims 1- 2, 4-5, 8-19, 22-23, 25, 27-33 and 77-79 stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. 5,547,541 to Hansen with or without Saint-Cyr (Adsorption Kinetics of Dyes and Yellowing Inhibitors on Pulp Fibers, Master of Engineering Thesis, McGill University, Montreal, Canada, June 1999). Hansen discloses the incorporation of particles onto fibers using a binder that is capable of hydrogen bonding with the fiber and bonding to the particles by either hydrogen bonding or coordinate covalent bonding. The binders are applied to a pulp sheet using devices such as sprayers, coaters and immersion applicators. The particles are then added to the pulp sheet by sprinkling, pouring or otherwise. The pulp sheet is then dried. The dried pulp sheets are dry fiberized before being used as a component of an absorbent article, such as diapers. It is asserted that the added chemicals in Hansen are inherently retained in the sheet within Applicants' claimed range of about 10% to about 100% when exposed to water and thus anticipate or render obvious Applicants' claimed invention. The Saint-Cyr thesis describes the adsorption kinetics of dyes on pulp fibers. The relevance of Saint-Cyr as a basis for rejection is not understood. Nevertheless, Applicants believe the teachings of Hansen do anticipate or suggest Applicants' invention for the reasons set forth below.

As an initial matter, the basis for rejection mentions the "chemicals" disclosed by Hansen at columns 19-20. Applicants are uncertain how this disclosure is being used in the basis for rejection. To be clear, the "chemicals" listed in Table II at columns 19-20 are the particles being bound to the fibers and are designated as being "water-soluble" (col. 19, lines 1-2). Naturally, when exposed to water, these particles will dissolve. In Hansen it is specifically stated that the particles dissolve when exposed to aqueous liquids. After a chemical dissolves, it is no longer retained on a fiber surface, but is instead present in the aqueous phase of the system. See Hansen at column 21, lines 36 - 43, which states: "This high solubility allows the particles to dissolve when exposed to aqueous liquids such as urine, but the hydrogen bonding capacity allows them to adhere to the fibers in the presence of binder but in the absence of aqueous liquid during use by an end user after the manufacturing process is completed. While bound, the particles substantially retain a discrete particulate form instead of dissolving or fusing, at least until they are exposed to an aqueous liquid." Therefore, to the extent the chemicals of columns 19-20 form the basis for rejection, it is not inherent that these particles will be retained at a level of 10 -100% as claimed.

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On the other hand, assuming the basis for rejection is based on the "binder" materials disclosed by Hansen, the binders only form hydrogen bonds with the fibers and do not form either ionic or covalent bonds as asserted in the ground for rejection. In this regard, see the Summary of the Invention of Hansen at column 3, lines 43-48 which states: "The binder has a functional group that is capable of forming a hydrogen bond with the fibers, and a functional group that is also capable of forming a hydrogen bond or a coordinate covalent bond with particles that have a hydrogen bonding or coordinate covalent bonding functionality." Also see the sentence bridging columns 4-5, which states: "The fibrous material may be cellulosic or synthetic fibers that are capable of forming hydrogen bonds with the binder, while the particles are selected to be of the type that are capable of forming hydrogen bonds or coordinate covalent bonds with the binder." In addition, see column 4, lines 13-17 which reads: "The superabsorbent particles are capable of forming hydrogen bonds or coordinate covalent bonds with the binder, depending upon the binder, while the binder in turn forms hydrogen bonds with the hydroxyl groups of the cellulose fibers." Further in column 4, lines 43-45, Hansen states: "The binder also forms hydrogen bonds with the hydroxyl groups of the cellulose, thereby securely attaching the superabsorbent particles to the fibers."

The foregoing statements clearly show that Hansen teaches that the binder only attaches to the cellulose fibers via hydrogen bonding. It will be appreciated by those skilled in the art that hydrogen bonds do not survive immersion in water. Consequently, the materials of Hansen do not inherently anticipate or suggest Applicants' claimed invention. The basis for rejection may be confusing retention of chemicals after dry fiberizing with retention after dispersing the fibers in the presence of water. After dry fiberization, hydrogen bonds would be expected to retain between 10 and 100% of the bound material on the fibers. However, after the same chemically treated pulp sheet is dispersed in water, hydrogen bonding would not be expected to retain the chemical on the fiber surface.

Regarding the Saint-Cyr reference, Applicants do reference Langmuir in the specification as noted in the Office Action. Specifically, the Background section states: "Nevertheless, the amount of the chemical additive that can be adsorbed or retained in the paper machine wet end generally follows an adsorption curve exhibiting diminishing incremental adsorption with increasing concentration, similar to that described by Langmuir." This statement is an attempt to explain why it is so difficult to achieve high chemical addition using conventional wet end chemical addition methods. Applicants are not referring to their invention when referencing Langmuir, but rather pointing out a problem that is overcome by Applicants' invention. In any event, the teachings of

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Saint-Cyr, when combined with the teachings of Hansen, do not suggest Applicants' claimed invention.

Regarding claims 8-13 and 33, while the claimed additives (softening agents, polyhydroxy compounds, strength agents) are mentioned in Hansen, there is no suggestion that they would be retained at a level of 10-100%. These additives don't actually perform their stated functions until the fiber web is redispersed in water and the chemically treated fibers are used to form a tissue product. The mere fact that an additive functions in the dry web of Hansen does not mean it will function after redispersing the fiber web in water and the fibers subsequently used to make a tissue product.

Regarding claim 19, it is asserted that Hansen discloses tissue forming. Instead, Hansen discloses laminating particles and binder "between tissue layers under high temperature and pressure to form laminated adherent tissue layers." This is not the same as Applicants' claim 19, which recites forming a paper or tissue product from said chemically treated dried fibrous web." Hansen is not disclosing tissue making within the meaning of Applicants' claims, but rather pressing chemicals between two previously manufactured tissues.

Claims 3, 6, 24 and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hansen in view of U.S. 3,556,931 to Champaigne. Hansen is applied as set forth in the rejection of claims 1 and 22. Hansen is silent regarding a z-direction gradient of the chemical additive. Champaigne discloses a process for making a cellulosic fluffed batt where an additive is added to the batt in a way that only penetrates the surface zone of the web, thus creating a gradient of chemical additive penetration into the web (Champaign column 1, lines 13-27, and column 1, line 64 to col. 2, line 19). It is asserted that it would have been obvious to combine Hansen and Champaigne because the combination would create a product of Hansen having a dense absorbent inner zone and a softer more fluid outer zone, as disclosed by Champaigne (col 1., lines 25-27). However, this basis for rejection fails to suggest Applicants' claimed invention for the reasons discussed above with regard to the shortcomings of the teachings of Hansen. Furthermore, Champaigne does not teach or suggest wet dispersion of the batt, and therefore makes no mention of retention of the debonding agent on the fibers after redispersing them in water.

For all of the foregoing reasons, it is believed that this application is in condition for allowance and such action is earnestly solicited.

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Appl. No. 09/800,645
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